

REMARKS

Claims 11-23 are pending and stand rejected by this Office Action. Claims 11-20 and 23 have been amended. No new matter has been added by these amendments.

Claims 11, 12, 18 and 19 stand rejected under 35 U.S.C. §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 11, 12, 18 and 19 have been amended to clarify the execution of real-time applications and transmission of data for real-time applications. These claims are definite and distinctly claim the subject matter which applicant regards as the invention. Reconsideration of these claims is respectfully requested.

Claims 11-15 and 18-22 stand rejected under 35 U.S.C. §102(e) as anticipated by Huang, U.S. Patent No. 6,483,846. Claims 16, 17 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the Huang patent. The applicants, however, respectfully disagree with these positions.

Claim 11, as stated above, has been amended to clarify the execution of real-time applications and transmission of data for real-time applications. Claim 11 now reads, in part:

A method for transmitting data . . . the method comprising the steps of:
at least one node receiving, processing and sending data for real-time applications in parallel during a real-time cycle by: executing a first processing step, wherein data received in a previous real-time cycle from another node via the communication path is analyzed to determine which received data are intended for real-time applications and which received data are intended for non-real-time applications; executing a second processing step, wherein real-time applications are executed; and executing a third processing step, wherein data for real-time applications to be transmitted to another node is sent via the communication path.

In Huang, however, the teaching is of a middle layer software that schedules and controls data traffic from an associated application onto the network between nodes. The “middleware” prohibits collisions for real-time data packets, but allows collisions for non-real time data. [Huang, Abstract]. There are two time periods for a given repetitive time cycle in which the “MRTE layer 150 implements a deterministic schedule for packets in the real time queue where collisions on the network are avoided for a first time period, and a standard Ethernet protocol during a second time period to allow transmission of non-real time packets obtained from the non-real time queue.” [Huang, Col. 5, lines 34-41]. As described with respect to the MRTE protocol 240 in Fig. 7, after initialization, the MRTE protocol 240 then waits for a user request and system interrupt before sending on the data. [Huang, Col. 8, lines 40-45]

In contrast, in the present invention, as claimed in amended claim 11, a processing unit of a single node carries out three processing steps within one real-time cycle. In the first step, data received from another node via a communication path is analyzed to determine which received data are intended for real-time applications and which are not. In the second step, real-time applications are executed. In the third step, data for real-time applications to be transmitted to another node is sent via the communication path. This enables a parallel operation of both real-time applications and non-real-time applications, avoiding interrupts.

Huang fails to teach or suggest such a method within which, in one real-time cycle, the claimed three processing steps are carried out within one node. In particular, Huang does not teach or suggest the analysis of data received in a previous real-time cycle from another node via the communication path, but instead focuses on the sending/transmission operation for the data. Therefore, Huang fails to anticipate or render obvious amended claim 11, and applicants respectfully request withdrawal of the rejection and allowance of this claim.

Claim 12 has also been amended and now reads, in part, the third processing step further comprises calculating the time remaining until the next transmission operation starts, in order to subsequently send data for non-real-time applications in the remaining time. Amended claim 12 is dependent on amended claim 11, and thus is patentable for at least the

same reasons given above. In addition, amended claim 12 is patentable because Huang further fails to teach or suggest such a method, including the calculation of the remaining time in the cycle for the sending of non-real-time applications data. Therefore, Huang fails to anticipate or render unpatentable amended claim 12, and applicants respectfully request withdrawal of the rejection and allowance of this claim.

In the same manner, claims 13-17 have also been amended consistent with the above claims. These claims are dependent on patentable claim 11 and thus are patentable for at least the same reasons. Therefore, applicants respectfully request withdrawal of the rejection and allowance of these claims.

Claims 18 and 19 have also been amended in a manner similar to claims 11 and 12, respectively. As a result, these claims are patentable for at least the same reasons set forth above. Claims 20-23 depend from claim 18 and thus are also patentable. Therefore, applicants respectfully request withdrawal of the rejection and allowance of these claims.

In conclusion, all of the claims remaining in this application should now be seen to be in condition for allowance. A prompt notice to that effect is respectfully solicited. If there are any remaining questions, the Examiner is requested to contact the undersigned at the number listed below.

Respectfully submitted,

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